DMLS Design Checklist

The accompanying checklist was produced by EOS GmbH for the design of parts to be built using DMLS with EOSINT M systems, including our M 250 and M270 machines. The guidelines are meant to ensure high quality and cost-effective results, whether you are a designer wishing to use DMLS for the first time or are a more experienced user.

The checklist applies to metal part, high performance tooling and direct production applications using Direct20 metal powder. For more information on Direct20, see the Materials section.

The checklist covers eleven subject areas:

1. Part geometry
2. Drill holes
3. Minimum structures
4. Slots
5. Ribs
6. Pins
7. Gating channel
8. Cooling channels
9. Operational overmeasures
10. Mounting into mother tool
11. Data quality

If you would like a copy of the full set of DMLS Design Guidelines published by EOS GmbH, including illustrations, contact Customer Service & Technical Support.

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DMLS Design Checklist

1 **Part Geometry**		
	Get only the moulding structures built?	
	Are the exterior dimensions as small as possible?	
	Wall thickness for cavities: 10 mm (5mm for DirectSteel H20)	
	Inserts should have round corners (e. g. Fig. 2) Radius 10 or 20mm	
	Is the building platform (thickness: 22mm or 36mm) to be used as part of the tool?	
2 **Drill Holes**		
	Are all drill holes designed into the CAD file?	
	Ejector drill holes	
	Gating system drill holes	
	Threaded holes designed as simple holes (1mm smaller than destined diameter)	
	Diameter of drill holes in CAD file 0.6 mm smaller than destined diameter	
4 **Minimum Structures**		
	Can sharp edges and corners be avoided?	
	Are the structures maller than 0.6 mm?	
5 **Slots**		
	Are there draft angles for deep slots?	
	Are the slots well accessible for grinding and polishing?	
	Does the tool have to be split?	
6 **Ribs**		
	Should steel ribs be inserted?	
	Are the pockets required for this provided in the CAD data?	
7 **Pins**		
	Plan cylindrical pins as inserts!	
	Should non-cylindrical pins be planned as inserts?	
8 **Gating channel**		
	Is there already a gating channel in the CAD file?	
9 **Cooling channels**		
	Can 3-dimensionally laid cooling channels be used?	
	Are these close to the modelling geometry?	
	Can the building time be kept to a minimum?	
10 **Operational Overmeasures**		
	Has machining allowance been added for the fitting of the inserts into the mother tool?	
	Has machining allowance been added to the parting planes?	
11 **Mounting into Mother Tool**		
	Are the inserts mounted comprehensively?	
	Does the locking pressure rest on the mother tool as well or only on the inserts?	
12 **Data Quality**		
	Do all planes intersect?	
	Have all double planes been removed?	
	Is the mesh density set to a suitable value for the STL generation (e.g. 0.02mm for DirectSteel 20 or 0.05 for Direct Metal 50)?	